



**Fig. 1.** *Desmatractum spryii*. (a) Photomicrograph of *D. spryii* preserved in Lugol's iodine. Scalebar, 10 µm. (b) Line drawing of *D. spryii*.

#### ACKNOWLEDGEMENTS

Thanks especially to Professor David John (Natural History Museum, London) for formally verifying the identity of *D. spryii*. We are grateful to Dr Elizabeth Haworth (Freshwater Biological Association) for confirming that no U.K. records of *D. spryii* pre-existed in the Fritsch Collection. We thank SEPA for providing the water chemistry data for Loch Mochrum. We also thank Dr Kevin Murphy (University of Glasgow) for proof-reading an earlier version of the manuscript.

#### REFERENCES

- Hegewald, E. & Tsarenko, P. (1998). *Desmatractum spryii* (Chlorophyceae, Treubariaceae) new for Germany and the Ukraine. *Algological Studies* 124, 15 – 22.
- John, D.M. & Tsarenko, P.M. (2011). Phylum Chlorophyta (Green Algae) Order Chlorococcales p. 412-414 In: John, D.M., Whitton, B.A. & Brook, A.J., (editors) *The Freshwater Algal Flora of the British Isles*, 2<sup>nd</sup> Edition. Cambridge University Press, Cambridge.
- Lang, P., Procházková, L., Krokowski, J., Meis, S., Spears, B.M., Milne, I. & Pottier, J. (2013). The bizarre Eustigmatacean alga, *Pseudostaurastrum limneticum* (Borge) Chodat, in a shallow, nutrient-enriched Scottish loch: new to the British Isles. *The Glasgow Naturalist* 25, (in press).
- Lund, J.W.G. (1942). Contribution to our knowledge of British algae – VIII. *Journal of Botany* 80, 57 – 73.
- Nicholls, K.H., Nakamoto, L. & Heintsch, L. (1981). *Desmatractum spryii* sp. nov., a new member of the Chlorococcales and comments on related species. *Phycologia* 20, 138 – 141.
- Reymond, O.L. & Kouwets, F.A.C. (1984). Taxonomical and ultrastructural survey of the genus *Desmatractum* West & West (Chlorococcales) Pp. 379 – 389 In: Irvine, D.E.G. & John, D.M. (editors) *The Systematics of Green Algae*, The Systematics Association, Special Volume No. 27, Academic Press.
- Reymond, O.L. & Skogstad, A. (1983). Etude de quelques caractéristiques ultrastructurales et écologiques chez *Desmatractum spryii* Nicholls, Nakamoto & Heintsch (Chlorophyceae,

Chlorococcales). *Archives des Sciences* 36, 361 – 367.

West, W. & West, G.S. (1902). A contribution to the freshwater algae of Ceylon. *Transactions of the Linnean Society of London 2<sup>nd</sup> series: Botany* 6, 123 – 215.

## The rare smut fungus *Urocystis fischeri* (Urocystidales, Ustilaginomycotina) from the Outer Hebrides, Scotland, with notes on its systematic position

Paul A. Smith<sup>1</sup> & Matthias Lutz<sup>2</sup>

<sup>1</sup>1128 Llancayo Street, Bargoed, Mid Glamorgan, CF81 8TP, U.K.

<sup>2</sup>Plant Evolutionary Ecology, Institute of Evolution and Ecology, University of Tübingen, Auf der Morgenstelle 1, D-72076 Tübingen, Germany.

E-mail: pa.smith@mypostoffice.co.uk

*Urocystis fischeri* Körn. is a smut fungus that forms blisters in the leaves of several species of sedges *Carex* spp. Vánky (2012) gives 28 species and one hybrid as hosts. Vánky (1994) has 23 and one of these respectively in Europe (Fig. 1), but most of these are not known as hosts in the British Isles. There are fewer than 30 distinct records of *U. fischeri* from the British Isles according to FRDBI ([www.fieldmycology.net/FRDBI](http://www.fieldmycology.net/FRDBI)), mainly from *Carex flacca* Schreb. (glaucous sedge), with a few records from *C. panicea* L. (carnation sedge) and one from *C. nigra* (L.) Reichard (common sedge).



**Fig. 1.** *Urocystis fischeri* on the leaves of the sedge *Carex rostrata*, Berchtesgaden National Park, Bavaria (Courtesy of Julia Kruse).

A specimen of *Carex demissa* Hornem. (common yellow-sedge) from Traigh Mheilen, N. Harris, Outer Hebrides, Scotland (NA9914) infected with a leaf smut was collected on 15 July 2012 and determined by P.A.S. as *U. fischeri*; M.L. confirmed the determination. The morphology of *U. fischeri* observed with a light microscope differed only slightly compared with the species description given by Vanky (1994): sori were light to dark reddish-brown (not lead-coloured); spore balls globose to ovoid (not irregular), 18 - 37 µm (not 20 - 40 µm), composed of 1 - 3 spores (not 4); spores 12 - 15 x 14 - 17 µm (not 11 - 16 x 14. 5 - 19 µm); sterile cells 5 - 11 µm (not 5 - 15 µm).

*Carex demissa* appears to be a new host species in Britain for this smut. The locality is an area of damp machair grassland, close to the sea (Fig. 2), which is heavily sheep-grazed. There were a few infected shoots together in one spot, but no other infections were seen. However, the heavily-grazed sward would have made other specimens easy to overlook, it was necessary to be on hands and knees to see the smut at all! There are three other records from the Outer Hebrides for *Urocystis fischeri*:

- Barra, July 1935, on *C. flacca* (Campbell 1936).
- Baleshare Island, North Uist, 10 Sep 1968, D.M. Henderson, on *C. flacca*, specimen in E.
- Butt of Lewis, [NB56], Lewis, 5 Aug 1973, R.W.G. Dennis, on *C. nigra* (Dennis, 1975).

R.W.G. Dennis undertook extensive investigations of microfungi in the Hebrides over many years (Dennis, 1986), but detected rather few specimens. Otherwise there are not many smut recorders, so it is likely that the scarcity of records reflects considerable under-recording. However, the host plants are common, and if infections were frequent, more reports would be expected, so only a tiny proportion of shoots is apparently infected.



Fig. 2. Machair habitat where *Urocystis fischeri* was collected on *Carex demissa* (in a damp area towards the right of the picture).

The internal transcribed spacer (ITS) and large subunit (LSU) rDNA sequences for this specimen have been determined (for methods see Lutz *et al.*, 2004, primers used: ITS1f/LR5), and added to GenBank (accession no. KF668284) where they were the first sequences for *U. fischeri*. The voucher specimen was deposited in Kew (accession no. K(M)188731).

To elucidate the relationship of the *U. fischeri* specimen within the genus *Urocystis* its ITS and LSU sequences, respectively, were analysed within datasets covering all the *Urocystis* species available in GenBank (for methods see Lutz *et al.*, 2012b). The phylogenetic hypothesis derived from both the ITS and LSU analyses (data not shown) revealed no clear pattern of phylogeny. Most relations between species were not resolved. According to the ITS analyses *U. fischeri* may be closely related to *U. muscaridis*, but more distantly related to some other *Urocystis* species. The taxonomic position of *U. fischeri* within the genus *Urocystis* is therefore apparently confirmed, although the wider relationships within this large genus await further clarification.

Strict host specificity at the species level was demonstrated recently for several smuts (e.g., Kemler *et al.*, 2009; Lutz *et al.*, 2008, 2012a; Piatek *et al.*, 2012, 2013a, b; Savchenko *et al.*, 2013), and it is possible that there will be variations within *U. fischeri* on its range of host species. The collection of further specimens on various hosts and molecular phylogenetic analyses are needed to assess this.

## REFERENCES

Campbell, M.E. (1936). Fungi. Pp 258-260 In: Forrest, J.E., Waterston, A.R. & Watson, E.V. (editors). The Natural History of Barra, Outer Hebrides. *Proceedings of the Royal Society of Edinburgh* 22, 240-296.

Dennis, R.W.G. (1975). Fungi of the Long Island with Coll and Tiree. *Kew Bulletin* 30, 608-646.

Dennis, R.W.G. (1986). *Fungi of the Hebrides*. Royal Botanic Gardens, Kew.

Kemler, M., Lutz, M., Göker, M., Oberwinkler, F. & Begerow, D. (2009). Hidden diversity in the non-caryophyllaceous plant-parasitic members of *Microbotryum* (Pucciniomycotina: Microbotryales). *Systematics and Biodiversity* 7, 297-306.

Lutz, M., Bauer, R., Begerow, D., Oberwinkler, F. & Triebel, D. (2004). *Tuberculina*: rust relatives attack rusts. *Mycologia* 96, 614-626.

Lutz, M., Piatek, M., Kemler, M., Chlebicki, A. & Oberwinkler, F. (2008). Anther smuts of *Caryophyllaceae*: molecular analyses reveal further new species. *Mycological Research* 112, 1280-1296.

Lutz, M., Vanky, K. & Bauer, R. (2012a). *Melanoxa*, a new genus in the *Urocystidales*



- (*Ustilaginomycotina*). *Mycological Progress* 11, 149-158.
- Lutz, M., Vánky, K. & Piątek, M. (2012b). *Shivasia* gen. nov. for the Australasian smut *Ustilago solida* that historically shifted through five different genera. *IMA Fungus* 3, 143-154.
- Piątek, M., Lutz, M. & Chater, A.O. (2013a). Cryptic diversity in the *Antherospora vaillantii* complex on *Muscari* species. *IMA Fungus* 4, 5-19.
- Piątek, M., Lutz, M. & Kemler, M. (2013b). *Microbotryum silenae-saxifragae* sp. nov. sporulating in the anthers of *Silene saxifraga* in southern European mountains. *IMA Fungus* 4, 29-40.
- Piątek, M., Lutz, M., Ronikier, A., Kemler, M. & Świdorska-Burek, U. (2012). *Microbotryum heliospermae*, a new anther smut fungus parasitic on *Heliosperma pusillum* in the mountains of the European Alpine System. *Fungal Biology* 116, 185-195.
- Savchenko, K.G., Lutz, M., Piątek, M., Heluta, V.P. & Nevo, E. (2013). *Anthracoidea caricis-meadii* is a new North American smut fungus on *Carex* sect. *Paniceae*. *Mycologia* 105, 181-193.
- Vánky, K. (1994). *European Smut Fungi*. Gustav Fischer Verlag, Stuttgart.
- Vánky, K. (2012). *Smut Fungi of the World*. APS Press, St. Paul, Minnesota.

---

## New records of smooth newt (*Lissotriton vulgaris*) in Lanarkshire

Erik Paterson

205 Telford Road, East Kilbride, South Lanarkshire,  
G75 0DG

E-mail: erikpaterson@virginmedia.com

---

During 2013, surveys were undertaken of ponds throughout the South Lanarkshire town of East Kilbride for the presence or likely absence of amphibians. A total of 21 ponds were selected using the criteria given by the Freshwater Habitats Trust (undated: see References) and surveyed during the months of April and May in the evenings by torchlight. The species detected during these survey visits at each site are given in Table 1 and the OS coordinates of the ponds are listed in Table 2. Of these 21 ponds, two were found to contain smooth newts. The NBN (National Biodiversity Network) Gateway lists smooth newts as occurring within East Kilbride area at 10 km resolution but offers no records at higher resolution within a 3 km

buffer of the town. A request for amphibian records from Glasgow Museums Biological Records Centre and South Lanarkshire Council yielded no additional records of this species within the official boundary of the town with a 3 km buffer.

On the evening of 10<sup>th</sup> April 2013 the so-called "Fire Pond" at Calderglen Country Park (Fig. 1) off the A726 (NS 65413 52864) was surveyed by torchlight and net from approximately 22:00 until 23:00. One male smooth newt was found during the survey and an estimated 170 clumps of common frog (*Rana temporaria*) spawn using the methods given by Griffiths et al. (1996) with 13 adults alongside 10 adult common toads (*Bufo bufo*). This site was surveyed only once. The Fire Pond is circular and approximately 400 m<sup>2</sup> in area. The pond is reportedly deep (pers. comm. South Lanarkshire Council Ranger Service, April 10<sup>th</sup>, 2013) and infrequently cleaned out. The pond is man-made and steep-sided with old bricks; it is fenced off and public access to it is restricted. The site had approximately 80% macrophyte cover when surveyed, including both submerged and emergent vegetation. No fish were noted and waterfowl presence was restricted to one or two mallard ducks (*Anas platyrhynchos*). The terrestrial habitat is moderate in quality but restricted in area, as the immediate vicinity of the pond offers foraging opportunity and minor hibernation opportunity for amphibians, with barriers to dispersal including amenity grassland, public access paths and a football pitch. The water was clear and its quality appeared good in view of the abundance and diversity of the aquatic invertebrates that were present.

The second pond I call GSO (Glasgow Southern Orbital) Business Park SUDS (Sustainable Urban Drainage System) (Fig. 2), a man made SUDS pond at the side of the A727 (NS 60085 55429). On the early morning of 23<sup>rd</sup> April, four adult male smooth newts in full breeding form with obvious large black spots, lobed toes on the hind feet and smoothly undulating crest from the rear of the head continuing along the vertebrae and on to the tail (Smith, 1951; Inns, 2009; Beebee, 2013) were noted by torchlight. In addition, four male and one female palmate newt (*Lissotriton helveticus*), five small unidentified female newts (*Lissotriton* sp.), and one clump of common frog spawn were noted. The site was surveyed again on 5<sup>th</sup> May when a male and female smooth newt were noted alongside 21 palmate newts and eight unidentified female small newts. The pond is roughly elliptic and approximately 350 m<sup>2</sup> in area with two culverts, one running in from drains at the nearby GSO Business Park and one running out into a small burn leading to Kittoch Water. There was little macrophyte cover apart from emergent vegetation at the pond's edge. No fish were noted and no